

COASTAL CONSERVANCY

Staff Recommendation
June 5, 2008

SAN FRANCISCO BAY NON-NATIVE OYSTER ERADICATION PROJECT

File No. 06-093-02
Project Manager: Lisa Ames

RECOMMENDED ACTION: Authorization to disburse up to \$225,000 to the San Francisco Estuary Institute for non-native oyster eradication in San Francisco Bay.

LOCATION: Areas of intertidal hard substrate in San Francisco Bay in all nine San Francisco Bay Area counties (San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Solano, Napa, Sonoma, Marin) (Exhibit 1)

PROGRAM CATEGORY: San Francisco Bay Area Conservancy

EXHIBITS

Exhibit 1: [Project Location Map](#)

Exhibit 2: [Survey and Collection Sites of Non-Native Oysters](#)

Exhibit 3: [Letters of Support](#)

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Sections 31160-31165 of the Public Resources Code:

“The State Coastal Conservancy hereby authorizes the disbursement of an amount not to exceed \$225,000 (two hundred twenty-five thousand dollars) to the San Francisco Estuary Institute to eradicate non-native oysters in San Francisco Bay. Prior to disbursement of any Conservancy funds, the San Francisco Estuary Institute shall submit for review and approval of the Executive Officer of the Conservancy a detailed work program, timeline, and budget, and the names and qualifications of any intended contractors for the project.”

Staff further recommends that the Conservancy adopt the following findings:

“Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed project is consistent with Chapter 4.5 of Division 21 of the Public Resources Code (Sections 31160-65), regarding the Conservancy's mandate to address the resource goals of the San Francisco Bay Area.
 2. The proposed project is consistent with the Project Selection Criteria and Guidelines last updated by the Conservancy Board on September 20, 2007.
 3. San Francisco Estuary Institute is a nonprofit organization existing under Section 501(c)(3) of the U.S. Internal Revenue Code, whose purposes are consistent with Division 21 of the Public Resources Code."
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PROJECT SUMMARY:

The proposed authorization would grant up to \$225,000 to the San Francisco Estuary Institute (SFEI) to continue its efforts to eradicate non-native oysters, *Crassostrea gigas* (*C. gigas*), from San Francisco Bay and to perform related monitoring and analysis. The project will entail surveying all susceptible parts of the Bay and removing any *C. gigas* found until re-surveys show densities below 10 oysters per kilometer of shoreline at all locations where *C. gigas* were discovered; conducting follow-up surveys at appropriate intervals until sufficient negative evidence is accumulated to conclude that *C. gigas* is likely eliminated from the Bay; and conducting associated research and public outreach. The project will also include expanded surveying and removal of *C. gigas* along the shoreline and in deeper areas with hard structures such as bridge supports, pier pilings, bases of power towers and similar substrates in the Dumbarton Bridge and San Mateo Bridge areas.

Surveys will be conducted on foot, from boats, from airboats or by other means as appropriate. Any oysters found that are over 70 mm (2.75") in length, the typical maximum size of the native oyster, will be detached from the substrate using hand tools and collected in buckets. Total extent of removal area will be less than five acres. SFEI has obtained permits from the California Department of Fish and Game (CDFG), the U.S. Fish and Wildlife Service (USFWS) and California Department of Transportation (CalTrans) and will coordinate with these agencies to ensure the protection and avoidance of any special status resources during surveying and removal of the exotic oyster. In marsh areas, project work will be suspended during clapper rail breeding season.

The Conservancy is involved in efforts to restore native oysters in San Francisco Bay, to restore intertidal habitats and communities in salt ponds in the southern part of the Bay, and to develop subtidal habitat and resource goals for the Bay. The establishment and spread of the exotic oyster *C. gigas* could threaten species that are critical to these restoration efforts and to achieving subtidal goals by potentially depleting phytoplankton populations, altering food webs, and competing with native oysters and other organisms. In regions where *C. gigas* has aggregated, including New South Wales in Australia, New Zealand, and the Dutch and German Wadden Sea, the oyster has smothered the native benthic species and adversely impacted habitats.

In San Francisco Bay, *C. gigas* grows faster than the native oyster and up to four times its size. Because of its food value, *C. gigas* has been farmed in large numbers in various central and

northern California Bays since 1928, including San Francisco Bay in the 1930s. However, until recently, there has been little indication of natural settlement of the exotic oyster in these areas.

Although it was initially unclear whether the exotic oyster (*C. gigas*) discovered in south San Francisco Bay in 2006 could become permanently established, SFEI, encouraged by state and federal agencies, began an effort to survey and remove the oysters by hand. This effort was funded by the Conservancy and three other organizations along with volunteer, staff-time and in-kind contributions from a large number of agencies and organizations, with oversight provided by a multi-agency and multi-stakeholder advisory panel. Data from this initial effort showed that there are populations in both the southern and northern parts of the Bay, both probably including multiple year classes, and each possibly derived from different sources. Based on the evidence, the advisory panel concluded that there is a real and immediate risk of permanent establishment with potential large-scale impacts in the Bay, and that preventing the establishment of this species is essential to restoring habitats and wildlife in the Bay.

At present, the exotic oysters' abundance and distribution still appears to be limited enough that eradication by hand removal is feasible, but their broader distribution in the Bay requires a larger and wider-ranging effort than was initially mounted. Reviewing the project status at the end of January 2008, the advisory panel recommended that the appropriate current level of planning is for a minimum three-year effort at about \$150,000 per year. Accordingly, SFEI is requesting half of this funding (\$225,000 to be expended over three years) from the Conservancy and will seek the rest of the funds from the California Wildlife Conservation Board and other sources.

SFEI is a nonprofit research institute whose mission is to foster the development of the scientific understanding needed to protect and enhance the San Francisco Estuary. It is governed by a Board of Directors composed of Bay Area scientists, environmentalists, regulators, local governments, and industries. The Project Manager, Dr. Andrew Cohen, is a Senior Scientist and the Director of SFEI's Biological Invasions Program, and a nationally recognized expert on invasive aquatic species. He wrote the petition that led to the listing of the alga *Caulerpa taxifolia* as a federally-banned species and helped to initiate the successful eradication of that species from southern California after it was discovered there in 2000. He has managed the current project since its start in late July 2006, working closely and collaboratively with numerous federal, state and local agencies and NGOs, planning and organizing the field work, and recruiting and directing volunteers.

Site Description:

Most of the *C. gigas* that have been found in San Francisco Bay to date are in two areas. One area is in southeastern San Francisco Bay, on property owned or managed by U.S. Fish and Wildlife Service (Don Edwards San Francisco Bay National Wildlife Refuge), California Department of Fish and Game (the shore at Whale's Tail and Eden Landing marshes), City of Hayward (Hayward Area Recreation District shoreline), East Bay Regional Park District (Hayward Shoreline) or the City of San Leandro (Roberts Landing shore and San Leandro Marina) or on structures owned and managed by California Department of Transportation (CalTrans). The other main area of settlement is on or near a site near San Rafael that was illegally planted with *C. gigas* seed oysters. A few *C. gigas* have been found at other sites. Refer to Exhibit 2 for the location of sites surveyed and non-native oysters collected in late 2007.

All the *C. gigas* have been found near the margins of the bay, in the intertidal zone up to about six feet above Mean Lower Low Water (MLLW), primarily on rocks, concrete structures, or concrete debris, with a few sitting on sediment between and among rocks, a few attached to metal debris, and one attached to wood.

The work will focus initially on searching for and removing *C. gigas* from areas where they have already been found, but will also expand upstream to the Carquinez Strait and in other tributaries up to the limit of salt water and to deeper areas of intertidal hard substrate in San Francisco Bay such as bridge supports, pier pilings, bases of power towers and similar substrates in the Dumbarton Bridge and San Mateo Bridge areas.

Project History:

In July 2006, researchers from the University of California at Davis discovered live non-native oysters in southeastern San Francisco Bay while performing a survey working under a Conservancy contract for planning the restoration of native oysters in San Francisco Bay. The exotic oyster was later identified genetically as *Crassostrea gigas*, which is native to Japan.

The San Francisco Estuary Institute (SFEI) worked in conjunction with many agency, non-profit and academic partners and volunteers to conduct a survey and removal effort on July 27-August 13, 2006 in San Francisco Bay. Nearly all of the *C. gigas* found were in southeastern San Francisco Bay, on property owned or managed by the U.S. Fish and Wildlife Service (Don Edwards San Francisco Bay National Wildlife Refuge (USFWS/Don Edwards NWR)), California Department of Fish and Game (CDFG) (the shore at Whale's Tail and Eden Landing marshes), the City of Hayward (Hayward Area Recreation District shoreline), the East Bay Regional Park District (EBRPD) (Hayward Shoreline) or the City of San Leandro (Roberts Landing shore), or on structures owned and managed by the California Department of Transportation (CalTrans). SFEI communicated and collaborated with each of these parties during the initial phase of this work, received in-kind support or assistance from several of them, and obtained needed permits or authorizations from US Fish and Wildlife Service, CDFG and CalTrans. U.S. Geological Survey (USGS) provided airboats, a boat and crews while students, researchers and others provided help in the field. The San Francisco Bay Joint Venture provided \$2,000 to defray some of the costs.

In September 2006, SFEI convened a meeting of interested agencies and organizations to discuss the results and decide on the next steps. At that point, over 250 large exotic oysters had been collected on the southeastern shore of the Bay over a distance of about 22 kilometers, along with a few outliers at Foster City and Richmond. All were collected in the intertidal zone near the shore (that is, not out on bridge supports or other structures near the center of the Bay), within an estimated tide range of around 0-6' above MLLW, which suggested that they were not present subtidally. The *C. gigas* were not present in great densities, and there are no ports, marinas or natural hard substrate in the main areas where they were found, and thus relatively little suitable substrate for oysters. The consensus of the meeting was that it seemed feasible to survey and remove a large enough portion of the remaining oysters to substantially reduce the likelihood of permanent establishment.

SFEI subsequently obtained \$25,000 in funding for the first year or so of eradication work from the Conservancy in November 2007. National Fish and Wildlife Foundation and the Regional Monitoring Program for Trace Substances managed by SFEI also provided funds in the amounts of \$46,895 and \$30,000, respectively.

The areas that were surveyed at least once and the total number of live *C. gigas* that were collected at these sites through December 2007 are shown in Exhibit 2. The advisory panel for the project met in January 2008 and reviewed the work and research findings to date. Based on the distribution of the oysters in both the south and north bays, the morphological evidence suggesting that these are two separate populations derived from different sources, and the evidence of multiple year-classes in each population, the panel concluded that the oysters pose a substantial and immediate threat to the Bay, despite the failure of this species to become established in central or northern California over approximately 80 years of opportunity. The panel approved an expanded effort to survey and remove the oysters and to conduct associated research.

PROJECT FINANCING:

Coastal Conservancy	\$225,000
Other sources (WCB potential)	<u>225,000</u>
Total Project Cost	\$450,000

In-Kind Contributions (Estimated)

San Francisco Estuary Institute (staff)	\$40,000
USFWS/Don Edwards NWR (airboats & staff)	10,000
USGS (boat & staff)	10,000
Department of Water Resources (boat & staff)	5,000
EBRPD(airboat & staff)	12,000
City and County of San Francisco (boat & staff)	5,000
City of Hayward (staff)	3,000
CDFG (boat & staff)	5,000
Save the Bay (equipment & staff)	500
Volunteers	<u>5,000</u>

Total In-Kind Contributions	\$95,500
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The expected source of Conservancy funds for this project is the Fiscal Year 2007/2008 appropriation from the “Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006” (Proposition 84) to the San Francisco Bay Area Conservancy.

This funding source may be used for the protection of bays, coastal waters and watersheds in accordance with the provisions of the Conservancy’s enabling legislation, Division 21 of the Public Resources Code. The proposed restoration project will result in the removal of a non-native species which threatens the water resources of San Francisco Bay’s intertidal and subtidal regions. The project’s consistency with Chapter 4.5 of Division 21 is discussed below.

Proposition 84 also requires that for restoration projects that protect natural resources, the Conservancy give priority to projects that demonstrate one or more of the characteristics specified in Section 75071(a)-(e). The proposed project satisfies the criteria as follows: SFEI will provide a non-state matching contribution toward the restoration costs of the project. The matching contributions will be in the form of staff time, equipment and volunteer services.

Finally, as required by Proposition 84, the proposed project will include an oyster removal plan based on the survey results and continued monitoring of the sites once the non-native oysters are removed to ensure *C. gigas* do not re-establish. SFEI will provide the Conservancy with a final report detailing how the project objectives were met.

CONSISTENCY WITH CONSERVANCY’S ENABLING LEGISLATION:

This project is undertaken pursuant to Chapter 4.5 of the Conservancy’s enabling legislation, Public Resource Code Sections 31160-31165, to address resource goals in the San Francisco Bay Area.

Section 31162 of the Public Resources Code authorizes the Conservancy to undertake projects and award grants in the nine-county San Francisco Bay Area. All of the proposed project area is within the nine-county San Francisco Bay Area.

Under Section 31162(b), the Conservancy may act to protect, restore, and enhance natural habitats and connecting corridors, watersheds, scenic areas, and other open-space resources of regional significance. The proposed project is fully consistent with these objectives.

In addition, the project satisfies all of the five criteria for determining project priority under Section 31163(c), as follows: 1) the project serves a multi-jurisdictional constituency, since it involves multiple counties in the San Francisco Bay Area; 2) the project can be implemented in a timely manner: because of ongoing efforts the grantee is prepared to commence surveying and collection immediately and complete the project in three years; 3) in the event the project is not implemented promptly, the opportunity for undertaking the project may be lost because the population of non-native oysters may have grown to a size where it is no longer feasible to eradicate; 4) Conservancy funding is matched by substantial monetary contributions and in-kind services; and 5) the project is fully consistent with and supported by adopted regional plans, including the San Francisco Bay Plan as described in the “Consistency with San Francisco Bay Plan” section, below.

**CONSISTENCY WITH CONSERVANCY'S
2007 STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):**

Consistent with **Goal 5, Objective D** of the Conservancy's 2007 Strategic Plan, the proposed project will control or eradicate a non-native invasive species that threaten coastal resources.

Consistent with **Goal 10, Objective A**, the proposed project will protect and restore natural tidal and sub-tidal habitats in San Francisco Bay through the control or eradication of the non-native Pacific oyster.

**CONSISTENCY WITH CONSERVANCY'S
PROJECT SELECTION CRITERIA & GUIDELINES:**

The proposed project is consistent with the Conservancy's Project Selection Criteria and Guidelines last updated September 20, 2007, in the following respects:

Required Criteria

1. **Promotion of the Conservancy's statutory programs and purposes:** See the "Consistency with Conservancy's Enabling Legislation" section above.
2. **Consistency with purposes of the funding source:** See the "Project Financing" section above.
3. **Support of the public:** The project is supported by the National Oceanic and Atmospheric Administration/National Marine Fisheries Service, the U.S Fish and Wildlife Service/Don Edwards San Francisco Bay National Wildlife Refuge, the San Francisco Bay Regional Water Quality Control Board/San Francisco Bay Region, the San Francisco Estuary Project, and the East Bay Regional Park District, See Exhibit 3 for support letters from these entities.
4. **Location:** The project is located within the nine San Francisco Bay Area counties, entirely within the jurisdiction of the San Francisco Bay Area Conservancy.
5. **Need:** This grant from the Conservancy is necessary in order for the grantee to be able to complete the eradication project; it represents half of the total funding and would be available in a timely manner.
6. **Greater-than-local interest:** This project involves multiple counties within the San Francisco Bay Area and control of this non-native species is necessary to avoid transport to other coastal and estuarine areas of the state.

Additional Criteria

7. **Urgency:** There is an urgent need for removal of the non-native oysters in San Francisco Bay, in order to decrease the possibility that this species will become established and spread to other locations.
8. **Leverage:** See the "Project Financing" section above.
9. **Readiness:** The grantee is ready and eager to begin the project as soon as possible to minimize the harm from the spread of this non-native species.

10. **Realization of prior Conservancy goals:** This project is consistent with the Conservancy's role and involvement in past non-native species eradication and control projects, including *Caulerpa* and *Spartina*. This project is also consistent with and helps to protect the investment that the Conservancy has made through prior funding to support native oyster restoration planning in San Francisco Bay and development of the San Francisco Bay Subtidal Habitat Goals Project.
11. **Cooperation:** This project involves extensive cooperation among the various landowners, resource managing agencies, community groups, academics and public volunteers. See the large number of in-kind contributions under the "Project Financing" section above.

CONSISTENCY WITH SAN FRANCISCO BAY PLAN:

This project is consistent with Policy 7 of the San Francisco Bay Plan concerning tidal marshes and tidal flats around the bay: "The Commission should continue to support and encourage the expansion of scientific information on the arrival and spread of invasive plants and animals, and when feasible, support the establishment of a regional effort for Bay-wide eradication of specific invasive species." The Executive Director of the San Francisco Bay Conservation and Development Commission submitted a support letter for this project and noted that the project is "conceptually consistent with the Commission's management program for San Francisco Bay".

COMPLIANCE WITH CEQA:

This project consists of surveying San Francisco Bay for the presence of non-native oysters and for removal of any non-native oysters found during the surveys, using hand-tools. The component of the project that involves surveying and monitoring for the presence of the non-native oysters is categorically exempt from CEQA, under 14 California Code of Regulations, Section 15306, "Information Collection", since it consists of basic resource evaluation activities that do not result in a serious or major disturbance to an environmental resource. The remaining component of the project, removal of the non-native oysters by hand-tools, is categorically exempt from CEQA under Section 15333, since it is a small habitat restoration project less than five acres in size and is necessary to assure the maintenance, restoration, enhancement and protection of habitat for wildlife. There will be no significant adverse impact on endangered, rare or threatened species or their habitat since surveying and oyster removal will be conducted in coordination with local regulatory agencies and suspended during clapper rail breeding season, the species of concern in these areas. There are no hazardous materials at or around the project site that may be disturbed or removed. The project will not result in impacts that are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probably future projects.

Conservancy staff will file a Notice of Exemption upon Conservancy approval of the proposed project.